Patent claims:

1. Aluminium oxide powder produced by flame hydrolysis and consisting of aggregates of primary particles, characterised in that
   - it has a BET surface area of from 100 to 250 m^2/g,
   - the dibutyl phthalate absorption is from 50 to 450 g/100 g of aluminium oxide powder, and
   - it shows only crystalline primary particles on high-resolution TEM pictures.

2. Aluminium oxide powder produced by flame hydrolysis according to claim 1, characterised in that it has an OH density of from 8 to 12 OH/nm^2.

3. Aluminium oxide powder produced by flame hydrolysis according to claims 1 or 2, characterised in that the chloride content is less than 1.5 wt.%.

4. Aluminium oxide powder produced by flame hydrolysis according to claims 1 to 3, characterised in that the proportion of particles having a diameter greater than 45 µm is in a range of from 0.0001 to 0.05 wt.%.

5. Aluminium oxide powder produced by flame hydrolysis according to claim 1 to 4, characterised in that in the X-ray diffractogram it exhibits an intensity, expressed as the counting rate, of more than 50 at an angle 2 theta of 67°.

6. Aluminium oxide powder produced by flame hydrolysis according to claim 5, characterised in that the X-ray diffractogram exhibits signals of gamma-, theta- and/or delta-aluminium oxide.

7. Aluminium oxide powder produced by flame hydrolysis according to claim 1 to 4, characterised in that in the X-ray diffractogram it exhibits an intensity, expressed

as the counting rate, of less than 50 at an angle 2 theta of 67°.

8. Aluminium oxide powder produced by flame hydrolysis according to claim 1 to 6, characterised in that
   - the BET surface area is from 120 to 200 m^2/g, the dibutyl phthalate absorption is from 150 to 350 g/100 g of aluminium oxide powder, the OH density is from 8 to 12 OH/nm^2 and in that
   - high-resolution TEM pictures show only crystalline primary particles and
   - in the X-ray diffractogram the aluminium oxide powder exhibits an intensity, expressed as the counting rate, of more than 50 at an angle 2 theta of 67° and exhibits signals of gamma-, theta- and/or delta-aluminium oxide.

9. Aluminium oxide powder produced by flame hydrolysis according to claim 8, characterised in that the BET surface area is from 125 to 150 m^2/g.

10. Aluminium oxide powder produced by flame hydrolysis according to claims 1 to 4 and 7, characterised in that
   - the BET surface area is from 120 to 200 m^2/g, the dibutyl phthalate absorption is from 150 to 350 g/100 g of aluminium oxide powder, the OH density is from 8 to 12 OH/nm^2 and in that
   - high-resolution TEM pictures show only crystalline primary particles and
   - in the X-ray diffractogram the aluminium oxide powder exhibits an intensity, expressed as the counting rate, of less than 50 at an angle 2 theta of 67°.

11. Aluminium oxide powder produced by flame hydrolysis according to claim 10, characterised in that the BET surface area is from 135 to 190 m^2/g.

12. Process for the production of the aluminium oxide powder produced by flame hydrolysis according to claims 1 to 11, characterised in that

- aluminium chloride is vaporised, the vapour is transferred by means of a carrier gas to a mixing chamber and,
- separately therefrom, hydrogen, air (primary air), which may optionally be enriched with oxygen and/or may optionally be pre-heated, are supplied to the mixing chamber, then
- the mixture of aluminium chloride vapour, hydrogen and air is ignited in a burner and the flame burns into a reaction chamber that is separated from the surrounding air,
- the solid material is subsequently separated from the gaseous substances, and
- the solid material is then treated with steam and optionally with air,
  - the discharge rate of the reaction mixture from the mixing chamber into the reaction chamber being at least 10 m/s, and
  - the lambda value being from 1 to 10 and
  - the gamma value being from 1 to 15.

13. Process according to claim 12, characterised in that a secondary gas consisting of air and/or nitrogen is introduced into the reaction chamber.

14. Process according to claims 12 or 13, characterised in that the ratio primary air/secondary gas is from 10 to 0.5.

15. Use of the aluminium oxide powder produced by flame hydrolysis according to claims 1 to 11 as an ink-absorbing substance in ink-jet media.

16. Use of the aluminium oxide powder produced by flame hydrolysis according to claims 1 to 11 as an abrasive.

17. Use of the aluminium oxide powder produced by flame hydrolysis according to claims 1 to 11 in dispersions.

18. Use of the aluminium oxide powder produced by flame hydrolysis according to claims 1 to 11 as a filler, as a carrier, as a catalytically active substance, as a ceramics base, in the electronics industry, in the cosmetics industry, as an additive in the silicone and rubber industry, for adjusting the rheology of liquid systems, for heat stabilisation, in the surface coatings industry.